Commentary

Training Physicians for Community-Oriented Primary Care in Latin America: Model Programs in Mexico, Nicaragua, and Costa Rica

PAULA A. BRAVEMAN, MD, AND FERNANDO MORA, MD, PHD

Abstract: Under the rubrics of preventive and social medicine, public health, and family and community medicine, medical educators in Latin America have developed programs to train physicians for community-oriented health care (COPC). The historical background for such programs in Latin America is reviewed. Three relevant examples of programs in Mexico, Nicaragua, and Costa Rica are highlighted, drawing on the author's direct experience with and in these faculties. The paper addresses the relation between these programs and national and regional trends in education and services. (*Am J Public Health* 1987; 77:485–490.)

The Community-Oriented Primary Care Model (COPC)

The concept of community-oriented primary care (COPC), well known to community medicine advocates in Latin America, provides a useful point of reference for examining issues of interest in this paper. COPC can be defined as a model of primary health care in which systematic mechanisms describe the health status and needs of a defined population (a "community"). According to the model, mechanisms for planning and evaluating programs respond to this information. Ideally, the population served is involved.[1] Planning based on epidemiologic methods is fundamental, as is universal coverage.

A medical curriculum emphasizing COPC would include some or all of the following: 1) application of epidemiologic tools in analysis of significant health problems in communities[2]; 2) health care administration and planning at a local level; 3) community participation; 4) exposure to nonmedical disciplines needed for primary health care; relevant skills will vary with development profiles of populations; and 5) adoption of innovative pedagogic methods such as emphasis on problem-solving in multidisiplinary teams.

Historical Background: Community Medicine in Latin America

The introduction of curricula relevant to COPC in medical schools in Latin America can be viewed as growing out of two major trends established in the 1950s and 1960s: 1) as public health emerged as an arena for national planning, there was recognition of the need for planning human resources in relation to health system needs;[3–5] 2) new awareness of the limitations of classical hospital-based curative models of medical care developed, especially in relation to needs of marginal urban populations and dispersed rural communities. This created an important opening for the development of preventive, social, and community medicine as disciplines. Related innovations in medical education manifested in the late 1960s and developed at many sites in the 1970s. In addition to financing by national governments, important support came from the Pan American Health Organization (PAHO) and from the Rockefeller and Kellogg Foundations.

Pioneering efforts had appeared in Chile well before trends manifested elsewhere. The University of Chile Faculty of Medicine introduced a course on preventive medicine as early as 1936, and soon thereafter added elective courses in hospital and social service administration, social legislation and social prevention. From 1947 on, the faculty had a model program placing students with marginal populations, not only in urban clinical settings but in schools, neighborhood centers, and rural sites. Reform in the 1960s introduced additional required courses; community field-work including rural clerkships continued to develop.[6–9] From 1962 on, the Universidad de Concepcion in Chile incorporated courses—including behavioral sciences, community medicine, biostatistics, demography, epidemiology, family medicine, and health administration and planning—into medical studies.[10]

The Universidad del Valle in Cali, Colombia was also an early pioneer, generally better known to North Americans. Its Department of Preventive Medicine and Public Health (established in 1954) included field experiences in community medicine and rural health programs in the 1960s.[11] Here, as in Chile and at the Ribeirao Preto medical faculty of the University of Sao Paolo in Brazil in the early 1950s,[12] change was notable, although accomplished within the framework of a traditional Flexnerian curricular model.

One of the first schools to attempt sweeping curricular change responding to the trends of the 1960s was the medical faculty of the Universidad de San Carlos in Guatemala, in the late 1960s. The San Carlos experiment was terminated in the next decade, its community activities and social science teaching viewed by the national government at the time as having politically subversive implications.

In Mexico, as elsewhere, the post-World War II period saw consolidation of social security systems, along with nationalization and expansion of hospital services and development of regulatory laws for medical practice.[13] Accompanying medical education reform was initially in the Flexnerian mode, focused on standardization and increasing clinical experience. By the 1970s, reform was directed at the relation between medical education and the needs of a complex delivery system with a large public sector.[14–16] The community-oriented A-36 program of the Universidad

Address reprint requests to Paula A. Braveman, MD, Assistant Clinical Professor, Division of Family and Community Medicine, AC-9, School of Medicine, University of California, San Francisco CA 94143. Dr. Mora is with the Division de Ciencias Biologicas y de la Salud, Universidad Autonoma Metropolitana—Xochimilcho, Mexico, DF. This paper, submitted to the Journal August 30, 1986, was revised and accepted for publication November 24, 1986.

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Nacional Autonoma de Mexico (UNAM) was started in Mexico City in 1972, originally conceived as a relatively distinct program within UNAM although ultimately developed as a track option for the first two years. The modular Universidad Autonoma Metropolitana-Xochimilcho program (see later text) began in 1974, also in Mexico City, as an entirely new and separate program; many of its founders viewed obstacles to modifying existing programs as too great. The Faculty of Medicine of the Universidad de Guadalajara introduced a curriculum in family and community medicine in 1975 in projects integrating instruction and research into primary care service.[17]

The first years following the 1959 revolution in Cuba saw a shift in medical education in that country away from an emphasis on hospital-based specialization. The immediate goal in the 1960s was to produce general physicians in adequate numbers to guarantee coverage of the entire population with services at the first level of care. By the mid-1970s, a focus on models of community medicine had developed in the National Health System (SNS). Increasing integration of teaching programs with community-based service programs received special attention. The "doctor for the 120 families" emerged as a model of service; however, education did not shift dramatically to provide new skills or status to the general clinician. A new interest in family medicine (or "medicina integral") as a specialty has emerged in the 1980s. This interest has stemmed in part from a critical look by the Cubans at the limitations of medical education so far in responding to the SNS's needs for community-oriented physicians with adequate prestige within the system, as well as with appropriate skills to maintain a "clinico-epidemiologic focus," to work in multi-disciplinary teams, and to treat a community not merely as a geographic space but as a "social space."[18,19]

In the Dominican Republic, in Costa Rica (see later text), at several sites in Colombia including Cali,[11,14] at the Universidad Central de Venezuela,[20] and at several of Brazil's 80 medical faculties, innovative training elements oriented toward preventive, social, and community medicine were introduced in the 1970s. A new campus of the Universidad Nacional Autonoma de Nicaragua was established in 1981 (see later text), with curricular modification occurring simultaneously at the Leon campus.[21] A new school with a primary care orientation was founded in Guyana in 1984.

Economic deterioration began in most of Latin America in the 1970s and has continued through the 1980s, except for a brief period of economic improvement in petroleum-exporting countries. This has had a serious impact on developments in medical education and specifically on the role of medical graduates in primary care. Cost containment became a central focus of primary care in most countries, and medical graduates came to be seen by some as too expensive. The concepts of community participation, incorporation of nonprofessional health promoters and traditional healers, along with the new ideology of self-care, have served as support for the argument that physicians are not relevant for community health activities. Such concepts have helped justify reductions in funding for creating new medical schools and sustaining medical training programs with a community focus.

In the following sections, the authors discuss in more detail the curricula and national conditions (see Appendix) relevant to COPC in the medical faculties of three Latin American countries: the Universidad Autonoma Metropolitana, Xochimilcho (UAM) in Mexico City, the Universidad Nacional Autonoma de Nicaragua (UNAN) in Managua, and the Universidad de Costa Rica (UCR) in San José. These programs were selected as examples for their relevance and the authors' personal knowledge of them.*

Mexico

Universidad Autonoma Metropolitana

The federally funded Universidad Autonoma Metropolitana (UAM), including a Medical Program on the Xochimilcho campus, was founded in Mexico City in 1974. All UAM programs share an emphasis on the wedding of academic efforts to activities responding to current societal needs and the use of multidisciplinary approaches focused on problem solving. PAHO leaders Juan Cesar García, Jose Roberto Ferreira, and Ramón Villareal, prominent spokespersons for the new systems-needs-oriented medical reforms throughout Latin America, were involved in the early articulation of UAM's approach.[22]

A series of 12-week modules constitute the study plan, with each problem-oriented or issue-oriented module covering material from several disciplines. For example, a module on reproduction includes relevant embryology, anatomy, physiology, and clinical obstetrics/gynecology, but also gives emphasis to material and methods from epidemiology, sociology, psychology, anthropology, and political economy (population policy issues). "Growth and Development of the Preschool Child" covers the use of health status indicators, problems in measurement, and identification of the high-risk infant/family as well as basic science and clinical material.[23]

While elements of the organ systems approach pioneered by Case Western Reserve University in the US may be seen in UAM's modular curriculum, the program more closely resembles those of McMaster University in Canada, of the University of New Mexico, and of Michigan State University's College of Human Medicine in its emphasis on community experience and its reach beyond both medicine and biology into the social sciences relevant to health. In many modules, medical students collaborate with students of nursing, pharmacy, social work, design (community or urban planning), or agronomy. Often, the task involves formulation of analyses and solutions of health problems of defined populations, using data collected in neighborhoods, schools, and work-places.

The entire fifth year of study is in a rural setting. Full-time faculty members visit regularly. Students help develop programs for adult or school health. Performance is measured not only by adequacy of clinical management (appropriateness of referrals, completeness of data) but also by such criteria as whether a student is successful in helping establish a community health committee and sometimes by changes in health indicators (per cent of children immunized).

UAM students and faculty acknowledge serious problems with their program. Faculty earning power has shrunk to a fraction of its original level and second or third jobs are often essential. The quality of teaching and research suffers. It is difficult for faculty members trained along traditional disciplinary lines to teach the multidisciplinary curriculum.

*Dr. Braveman has coordinated academic exchange projects between US medical schools and the highlighted faculties in Mexico since 1984, in Nicaragua since 1982, and in Costa Rica since 1986. Dr. Mora has served as Coordinator of the UAM Medical Program (1984–86), and is now Chief of the Division of Biological Sciences and Health at that institution. He has served as a consultant for PAHO to the program in Nicaragua.

Students must acquire skills in many areas, and they may feel a lack of confidence in situations where traditional skills are emphasized, e.g., in hospital-based rotations. Confidence is higher during the year of rural social service which, as in most of Latin America, is required of all medical graduates in Mexico. In contrast, graduates of more traditional schools may be confronting the realities of rural practice for the first time.

Medicina Integral of UNAM and National Policies

The program in Comprehensive Medicine (Medicina Integral) of the large, also federally funded, National Autonomous University of Mexico (UNAM) in Mexico City, known as Plan A-36 (36 students in each of two entering classes yearly), was established in 1972. A-36 students are placed in community-based classrooms with significant activities in community health, for their first two years. Unlike UAM students, the A-36 students join a traditional track after the first two years. Many express a concern that it is difficult to sustain their original community medicine orientation through the traditional curriculum of the clinical years. However, Plan A-36 has produced more than its share of leaders in community medicine in Mexico.

A serious problem for the A-36 and UAM programs is the current lack of an adequate infrastructure to absorb doctors trained in community-oriented primary care, after social service. Some secure posts within the Social Security system (IMSS) serving insured workers and their families (45 per cent of the population).[24] IMSS is well established in primary care but does not emphasize a community-oriented approach outside of the rural IMSS-COPLAMAR program.[25] Some graduates (less than 5 per cent) secure posts in Health Ministry (SSA) primary care clinics which are community-based but may have limited activities in detection and promotion outside the clinical site. A number of A-36 and UAM graduates opt for administrative careers as an alternative to private practice.

Impressive gains in numbers of primary care facilities for the rural and indigent urban population have been made in Mexico.[26] SSA has prioritized further extension of coverage with primary care services in the 1980s; this could change physician employment options. Mexico's foreign debt crisis, exacerbated by falling oil prices, may make it increasingly difficult for the Ministry to meet its desired timeline. The September 1985 earthquake, which caused significant destruction of tertiary level medical resources, has exacerbated economic constraints but paradoxically may have resulted in more emphasis on decentralized primary care.[27]

Nicaragua

Autonomous National University of Nicaragua

The Faculty of Medical Sciences of the National Autonomous University of Nicaragua (UNAN) had a single campus in the city of León prior to the 1979 revolution. The curriculum followed a traditional Flexnerian model. Efforts to introduce a community-oriented curriculum in the 1970s were frustrated by the Somoza government, which was threatened by university-community ties.[21] Establishment of a new government in 1979 was followed by creation of a national health system (SNUS) emphasizing planning, primary care, regionalization, and public participation in health activities.[28] Health and education received new priority in resource allocation, and impressive gains in primary care were achieved rapidly[28] (see Appendix). Medical school enrollment increased by a factor of four in 1981 with creation of a second medical campus in Managua; a new curriculum was designed.[29] "Work-study"—a course integrating community-oriented research and clinical practice and experience in community health education and promotion—has been a key element.

Like most post-1979 programs in Nicaragua, the UNAN curriculum is eclectic. Unlike UAM's modular approach, the UNAN curriculum has generally preserved the traditional focus on basic science in the first three years, and clinical emphasis in the last two years. Despite traditional features, the Nicaraguan program is innovative in the emphasis placed on public health material (approximately 30 per cent of total curricular time), in its interdisciplinary "Health and Society" course which has objectives and methods similar to those of a University of Costa Rica course of the same name (discussed later), and in the experiential work-study unit.

Medical students of UNAN are placed in community settings from the outset. Until recently, work-study involved 20 per cent of curricular time.[29] Pressures to cover traditional curricular material with limited faculty have reduced work-study time to approximately 10 per cent. Current curricular overhaul may result in an increase. According to UNAN faculty in Preventive Medicine, the revision process is resulting in improved correlation of work-study with other course work.

In a typical work-study project, students conduct assessments of child health status in neighborhoods. They work with neighborhood volunteers weighing and measuring preschoolers, inquiring about immunization status and symptoms of parasitism. Home assessments are made to assure coverage and to evaluate potential risk factors. The local health center may use the information in evaluating and planning its own services. Students are introduced to collaboration with community organizations. Exposure to living conditions in a poor neighborhood, and understanding how these conditions impact upon health, is seen by faculty as important in itself, given the relatively privileged background of medical students in Nicaragua as in Mexico and Costa Rica, at the present time.

A spectrum of attitudes toward the work-study experience is found among students at UNAN. Some are enthusiastic; some view it as an extraneous exercise they must endure in order to get to do "real" medicine, which occurs in hospitals. Community physician faculty provide role models that seem to help counteract this attitude.

Employment for UNAN Graduates in Community-Oriented Health Care

The existence of the National Health System (SNUS) in Nicaragua, along with the effects of the previous gross under-production of physicians and continued emigration of health professionals, assure that all medical graduates will have employment utilizing their community-oriented preparation in the public sector, if they so desire, after their social service period. A new graduate often becomes a health officer for a rural area or director of a comprehensive primary care center in a community. A large private sector exists alongside the state-directed national system. Most Nicaraguan physicians opt for a mix of public employment with private practice.[28]

The objective of training physicians for community-oriented health care is an explicit focus of the two medical school campuses in Nicaragua. Relevant material and experience were introduced in 1981 into a relatively traditional basic science-clinical science curriculum. Current efforts are

for consolidation rather than expansion of the new curriculum for students; a Family Practice residency is scheduled to begin in 1987. In Nicaragua, COPC-focused educational reform has developed in tandem with the building of a new health system with a delivery model based on the COPC paradigm. External pressures and a legacy of limited resources are slowing but not halting development.

Costa Rica

The Costa Rican government, with a relatively long democratic tradition and without an army, has had a strong record of social spending. The 1970s were a period of particularly high levels of investment in education and health. Now grappling with one of Latin America's highest per capita foreign debts[30] and faced with political problems related to the "contra" war against Nicaragua, Costa Rica's social progress may be jeopardized. For the present, however, educational programs as well as health indicators reflect the country's development in health (see Appendix).

University of Costa Rica: Programs in Preventive and Social Medicine

Costa Rican educational reform in 1975 mandated that all public university students, including students of medicine, were required to complete two seminars called "The National Reality." Each seminar involves 300 hours of interdisciplinary field work involving research on a theme of current social concern. Additionally, from the late 1970s through 1982, the University of Costa Rica (UCR) medical school included two courses in preventive medicine. By 1983, course material was expanded and a course on health and society replaced the traditional history of medicine unit within preventive medicine.* Objectives for the health and society course include: knowledge of principal health and economic indicators; "location of the situation in Costa Rica within a global and regional context; understanding of the relation between socioeconomic processes and health and medical practice."[31]

Prior to 1986, preventive/social medicine course work ended in the second year. A new curricular plan, begun in 1986, is scheduled to continue through 1990, phasing in preventive/social medicine material throughout medical school and into the internship.[32]

Courses in family and community medicine involve trainees in outreach, public education, detection, and health promotion activities. Each trainee follows a group of families, and interns are expected to provide continuity through inpatient as well as outpatient and home care. As in student courses in applied epidemiology, trainees design and carry out a research protocol in primary care epidemiology.[33]

San Ramón Program in Rural Health

The Program in Rural Health in San Ramón, Costa Rica, is primarily a service program, mentioned here because it has provided field experience for students within a COPC model. From the mid-1970s on, medical students from the Autonomous University of Central America (UACA) have been integrated for one to two months at the end of their fifth year of training into a program in San Ramón, Alajuela, formerly called the Hospital Without Walls (HWW), now the San Ramón Program in Rural Health. The San Ramón program grew from community health promotion projects involving hospital staff in the 1950s,[34] rapidly becoming a comprehensive program that attracted international notice. Growth of the initially volunteer effort was nurtured in the 1970s by the establishment of regionalized primary care services in the province as part of the large government investment in health during that period.** In 1982, paradoxically, at the same time that incorporation into the national system put the program on more sure economic footing, a number of factors, including loss of staff, were apparently accompanied by a decline in the active community participation that was an HWW hallmark. Student involvement has been more limited since 1982. Here we refer to the pre-1982 HWW program for its historic interest and the issues raised.

Medical students in San Ramón worked in teams with dental, nursing, and social work students, participating in community-based data collection and in the training of community volunteers to perform popular health education and health promotion activities. Clinical faculty rated the medical students as lagging behind nursing and social work students in their ability to integrate into community-based activities. This was attributed to the fact that the medical students were exposed to the community-oriented model for the first time at the end of five years of traditional training.[34]

One special asset of the HWW program in teaching medical students was the high degree of integration of hospital, outpatient, and community activities. Thus students had the benefit of the excellence of a hospital as a site for learning about disease, without the usual isolation of this type of learning from an understanding of pre- and post-hospital determinants of health and disease.

In Costa Rica, regionalized primary health care services have been developed throughout the country against the background of a substantial infusion of national funds into health and gradual integration of Social Security and Ministry of Health resources and facilities. National investment and coordination in primary care have created a context for gradual growth and expansion of medical curricula designed to educate physicians with community medicine skills. An active role for community organizations receives less emphasis than in the historic HWW model, which created a special training ground.

Conclusions

Experiments in attuning medical education to societal needs have appeared throughout Latin America in the last 15 to 20 years, taking diverse forms. The examples reviewed are representative of the range of types and degrees of innovation among institutions that have participated actively in the reform movement. UAM in Mexico exemplifies the end of the spectrum with a fundamentally non-traditional approach in content and form, and the hope that medical education reform could accelerate reform in the health system. UNAN in Nicaragua and UCR in Costa Rica represent, in different ways, the incremental approach to curricular change seen more frequently among fellow innovators in the hemisphere, with system needs driving changes in training. Of the three programs, only that in Nicaragua can guarantee its graduates employment utilizing the skills for community health the curriculum imparts. Various aspects of the national context seen as important factors in the development of the cited programs in Mexico, Nicaragua, and Costa Rica are summarized in the Appendix.

*M Cartin, faculty in Preventive and Social Medicine, University of Costa Rica, personal communication, San Jose, Costa Rica, July 1986.

**O Barboza Ruiz, Director, Program in Community Health, San Ramón, Costa Rica, personal communication, July 1986.

APPENDIX
National Conditions in Three Latin American Countries

Relevant Factors	Mexico	Nicaragua	Costa Rica
National population	76 million[36]	3.02 million[37]	2.4 million[37]
Proportion of population urban[38]	67%	53%	44%
Proportion of 1981 total national budget for health	8.2%[36]	12.0%[37]	4.2%[37,a]
Number of physicians per 1,000 population	7.7(1984)[39]	5.1(1983)[37]	9.3(1983)[37]
Number of medical schools	57	2	2
Total enrollment excluding interns	70,000[13]	2,240[21]	840[c]
Principal health institutions/sources of health care	2 Social Security Institutes; DIF[b]; Ministry; public agencies starting to consolidate; coverage for oil and rail workers; private sector	National Health System encompasses old Social Security and Ministry; private sector	Social Security and Ministry consolidating since 1970s; private sector
Estimated proportion of population unprotected by above health care sources	18.4%(1984)[39] 40%(1970)[c]	10–20%(1986)[c] 60%(1970)[40,c]	10%(1986)[c] 50%(1970)[d]
Infant mortality per 1,000 live births	34.2(1984)[36] 60.9(1973)[24]	89(1983)[37] 121(1970)[41]	19.1(1983)[37] 60(1970)[d]
Official policy on community participation	Approved; oriented toward cooperation	Emphasized; oriented toward initiative, popular campaigns	Approved; oriented toward cooperation
Prospects for salaried positions in Community-Oriented Primary Care after Social Service	Limited; will improve if Ministry achieves goals for expansion of primary care coverage	Assured	Fair prospects within consolidated Social Security-Ministry facilities, but some physician underemployment

[a]Underestimated due to exclusion of decentralized institutions.[37]
[b]Comprehensive Development of the Family (public).
[c]Projections or estimates from unpublished sources.
[d]Personal communication from O. Barboza Ruiz, Director, Program in Community Health, San Ramon, Costa Rica, July 1986.

The problem of shortage of finances—which manifests in limitations on faculty development, research and faculty-student interaction—is seen in all programs. Another widespread problem is resistance of some faculty, especially affiliated faculty, to the new directions, or lack of preparation to teach new material and methods. All programs have encountered difficulties in inserting new material in social, family, and community medicine into traditional plans of study. New curricular elements may not be seen as relevant to established medical practice and science; their basis in social knowledge may not always be viewed as scientific. The growth of preventive medicine and epidemiology as disciplines with quantitative tools has strengthened community medicine in its battle for academic recognition.

Two trends were identified as setting the stage for community-oriented and primary care-oriented medical education reform in Latin America: 1) broader public health planning encompassing planning of human resources; and 2) a turn toward alternative approaches to supplement traditional curative models for addressing needs of marginal urban and rural communities. Both trends may survive despite, or potentially because of, budgetary constraints. Cost containment however, may direct efforts away from use of physicians in health strategies for underserved populations where two-tiered standards of care exist. The principle that health planning should encompass planning of human resources seems firmly established albeit difficult to implement. In addition, capacity to sustain and expand public sector activity in health will be necessary to sustain the first trend. The foreign debt crisis and unfavorable balance of trade put this capacity in serious jeopardy and may result in contraction of the public sector. For Nicaragua and Costa Rica, peace in the region is a *sine qua non* of the ability to continue desired rates of progress along prioritized lines in health services and education.[35]

The PAHO Committee on the Teaching of Preventive and Social Medicine stated more than 15 years ago: ". . . it is the structure of medical care itself that exercises a dominant influence on the process of training human resources, particularly the structure of the labor market and the conditions surrounding medical practice."[16] Where investment in a coordinated national health system with a community-based health services base creates a need for practitioners capable of functioning within that system, programs for training such practitioners can expect to enjoy growth. In the absence of such a context, innovative as well as traditional programs will encounter formidable obstacles to achieving their goals.

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Study Tour of China

The UCLA School of Public Health, in cooperation with UCLA Extension, will present "Health Education and Community Participation Study Tour of China," June 27–July 18, 1987. Tour leaders will be Virginia C. L. Li, PhD, MPH, professor, and E. Richard Brown, PhD, associate professor, both with the Division of Behavioral Sciences and Health Education, UCLA School of Medicine.

The objective of the three-week tour and seminar, designed for health and welfare professionals as well as teachers and researchers in medicine, public health, nursing, and biological, social and humanistic disciplines, is to examine the application of Chinese health education methods in medical care and public health settings.

The study tour will begin in Shanghai with a four-day seminar on "Community Participation and Health" sponsored by the World Health Organization-Shanghai Collaborative Center for Health Education. Afterwards, field trips are scheduled to health care facilities, neighborhoods and community organizations in urban and rural areas of Beijing, Xian, and Guilin. Special emphasis will be placed on the organization of health services and application of health education materials to family planning, pediatrics, maternal and child health, geriatrics, and occupational health.

Enrollment fee is $250, not including transportation, meals, accommodations or other program expenses. A package plan covering these tour costs is available for approximately $3,450.

UCLA Extension's Department of Health Sciences certifies that this activity meets the criteria for 33 hours in Category I of the Physician's Recognition Award of the American Medical Association Certificate.

For additional information and/or a complete program itinerary, contact: Division of Science, UCLA Extension, P.O. Box 24901, Los Angeles, CA 90024, tel: (213) 825–7093.